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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,542	01/07/2002	Charles E. Birse	PA002P1	4848

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EXAMINER	
MERTZ, PREMA MARIA	
ART UNIT	**PAPER NUMBER**
1646	

DATE MAILED: 06/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/036,542	BIRSE ET AL.	
	Examiner	Art Unit	
	Prema M Mertz	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2 and 25-36* is/are pending in the application.

4a) Of the above claim(s) *2* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5/14/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1, 3-24 have been canceled on 5/14/04. Original claim 2, and new claims 25-36 (5/14/04) are pending in the instant application.

Election/Restriction

1. Applicant's election with traverse of Group 28 drawn to the polypeptide consisting of the amino acid sequence of SEQ ID NO:62 (new claims 25-36) on 5/14/2004 is acknowledged. The traversal is on the ground(s) that the restriction is improper since the examiner has not shown that examination of the 225 Groups into which the inventions have been divided, would entail a serious burden. This is not found persuasive because the searches for the 25 different gene sequences in the different Groups would not overlap. Inventions 26-50 are independent and distinct, each from the other, because each of the polypeptides are materially different products, which are structurally and chemically different, capable of separate manufacture and use. The products in the different Groups are physically and chemically distinct from each other, and if patentable would support separate patents. Distinctness is further shown because a search of one of the polypeptides would not reveal art pertinent to the other and each of these products can be made and used without any one or more of the other products. Separate searches would be required for searching each of the polypeptide products eg. a search of the literature for the polypeptide of SEQ ID NO:62 would not necessarily reveal art for the polypeptide of SEQ ID NO:63. Therefore, each of the polypeptides are not related and are properly restrictable in accordance with MPEP § 806.04 and MPEP § 808.01.

Furthermore, with respect to elected Group 28, for example, drawn to the polypeptide of amino acid sequence set forth in SEQ ID NO:62, a search for this protein in the prior art would

not necessarily reveal art to proteins of amino acid sequences set forth in SEQ ID NO:60, 61, 63-84, antibodies to these various proteins and nucleic acids encoding these various proteins. Therefore, the different proteins, antibodies and nucleic acids encompassed by the different Groups comprise inventions lacking either a common structural property which distinguishes them as a Group from structurally related compounds of the prior art or which provides them with a common utility which is lacking from those of the prior art.

Having shown that these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their recognized divergent subject matter as defined by MPEP. § 808.02, the Examiner has *prima facie* shown a serious burden of search (see MPEP. § 803). Therefore, an initial requirement of restriction for examination purposes as indicated is proper.

The Groups as delineated in the restriction requirement of 4/15/04) are patentably distinct one from the other such that each invention could, by itself, in principle, support its own separate patent (as shown by the arguments put forth in the written restriction requirement).

The requirement is still deemed proper and is therefore made FINAL.

Claim 2 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

2. The use of the trademark ATCC has been noted in this application. It should be capitalized whenever it appears and be accompanied by the ® symbol.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

3. The abstract of the disclosure is objected to because there is no mention in the abstract of the specific protein being claimed. Correction is required. See MPEP § 608.01(b).

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim rejections-35 U.S.C. 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 25-36 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

The instant claims are drawn to a polypeptide, which has an as yet undetermined function or biological significance. Until some actual and specific significance can be attributed to the protein identified in the specification as having "sequence homology" to the "human ZN-alpha 2-glycoprotein (ZAG) (page 34, lines 8-11), the instant invention is incomplete. Applicant's assert that the claimed protein shares sequence homology with the "ZAG" protein which ZAG protein stimulates lipid degradation in adipocytes and causes extensive fat losses associated with some advanced cancers and the ZAG protein also shares 30-40% sequence identity with the heavy chains of class I major histocompatibility complex (MHC) proteins (see specification, page 34, lines 11-14). However, the instant specification does not disclose the amount of homology shared between the instantly claimed protein of SEQ ID No:62 or any information regarding functional characteristics or the biological activity of the instantly claimed protein. The specification on pages 36, line 3, to page 37, line 7, describes many potential activities for the instant protein.

"Polypeptides of the invention would be useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include but are not limited to: disorders of the male reproductive system, such as prostate cancer. Similarly, polypeptides and antibodies directed to these polypeptides would be useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the male reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues or cell types (e.g., prostate, reproductive, cancerous and wounded tissues) or bodily fluids (e.g., semen, lymph, serum, plasma, urine, synovial fluid and

spinal fluid) or another tissue or sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder."

"The tissue distribution in prostate and prostate cancer tissue, and homology to ZAG, indicates that polynucleotides and polypeptides corresponding to this gene, variants and/or derivatives of these polypeptides (such as, for example, fragments as described herein, polypeptides at least 80%. 85%, 90%, 95%, 96%, 97%, 98%, 99%, or 100% identical to these polypeptides, or polypeptides encoded by a polynucleotide which hybridizes, under stringent conditions, to the polynucleotide encoding these polypeptides); and/or agonists and/or antagonists of these polypeptides (including antibodies directed to polypeptides or polynucleotides of the invention or to fragments thereof would be useful for the treatment, prevention, detection and/or diagnosis of tumors, especially prostate cancer, as well as cancers of other tissues where expression has been indicated. The expression of this novel ZAG variant in the prostate tissue may indicate the gene or its products could be used to treat, prevent, detect and/or diagnose disorders of the prostate, including inflammatory disorders, such as chronic prostatitis, granulomatous prostatitis and malacoplakia, prostatic hyperplasia and prostate neoplastic disorders, including adenocarcinoma, transitional cell carcinomas, ductal carcinomas, squamous cell carcinomas, or as hormones or factors with systemic or reproductive functions. Furthermore, the protein may also be used to determine biological activity, to raise antibodies, as tissue markers, to isolate cognate ligands or receptors, to identify agents that modulate their interactions, in addition to its use as a nutritional supplement. Protein, as well as, antibodies

directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tissues."

However, contrary to Applicants disclosure, there is no guidance given about which specific activity/activities the claimed polypeptide would be likely to have. The specification does not demonstrate that the claimed polypeptide actually displays any of these recited activities for treatment, prevention, detection and/or diagnosis of prostate tumors. In the absence of knowledge of the specific biological significance of the claimed protein, there is no immediately obvious patentable use for it. Since the instant specification does not disclose a "real world" use for the claimed protein then the claimed invention is incomplete and, therefore, does not meet the requirements of 35 USC § 101 as being useful.

A protein of unknown function would have utility if it can be employed as an indicator of a diseased state or of the presence of a disorder. The only disclosed function for the protein of the instant invention is that it is expressed in prostate tissue (see page 36, lines 29-30). However, Applicants have failed to show differential expression of the instant protein in normal prostate tissue and in tumor prostate tissue. Applicant is only required to identify one substantial credible utility and the employment of this protein only as the subject of further research does not satisfy the utility requirement of 35 U.S.C. § 101 because the courts have interpreted this statute as requiring an invention to have "substantial utility" "where specific benefit exists in currently available form". The employment of a protein of the instant invention, as a marker for disorders of the male reproductive system, such as prostate cancer (page 36, lines 3-5) is not a substantial or specific utility because Applicants have failed to show differential expression of this protein in normal prostate tissue and in tumor prostate tissue.

Applicants assert on page 36, lines 3-4, of the instant specification that the polypeptides claimed can be used in the detection of prostate cells in a biological sample because the gene corresponding to SEQ ID NO:62 has been shown to be expressed in this cell type. However, contrary to Applicants assertions, the employment of a polypeptide of the instant invention as a tissue specific marker for prostate cells is not a substantial or specific utility since prostate cell specific polynucleotides and proteins were already known in the art. All human proteins can invariably be classified into two categories, those which are expressed in a tissue or developmentally specific manner and those, which are expressed ubiquitously. It can be alleged that any protein which is expressed in a tissue specific manner can be employed to detect the tissue in which it is expressed in a sample. Alternately, a human protein which is expressed ubiquitously can be employed to detect the presence of any human tissue in a sample. Such utilities are analogous to the assertion that a particular protein can be employed as a molecular weight marker, which is neither a specific or substantial utility.

Applicants disclose in the specification that the claimed protein has homology to the "ZAG" protein (page 34, lines 8-10). The state of the art is such that functional information can be automatically derived from structural information only to a limited extent, (see Sklonick et al, Nature Biotechnology, Vol.18, No.3, pages 283-287, especially page 286, middle of column 1). Sklonick et al also state that knowledge of the overall structure or domain family is still not enough to confidently assign function to a protein. Therefore, there is little doubt that, after further characterization, the protein is found to be member of the ZAG protein decay family, the claimed protein would have a specific, substantial and credible utility. However, further characterization is part of the invention and until it had been undertaken, the claimed invention is

not supported by a specific asserted utility or a well established utility. The claimed invention is directed to a polypeptide of as yet undetermined function or biological significance. Thus, since there is no biological activity disclosed for the claimed protein, the claimed invention is not supported by either a specific and substantially asserted utility or a well established utility.

Claims 25-36 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a substantially asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention. The instant specification does not disclose a biological activity for the claimed protein, therefore, there is no specific and substantial asserted utility or well established for the claimed protein. The fact that the claimed protein has homology to the ZAG protein is not sufficient to establish a specific and substantially asserted utility or a well established utility for it.

Claim rejections-35 U.S.C. 112, first paragraph

6. Claims 25, 28-30 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make use the invention.

The deposit of biological material is considered by the Examiner to be necessary for the enablement of the current invention because the claims require availability of the deposit. Elements required for practicing a claimed invention must be known and readily available to the public or obtainable by a repeatable method set forth in the specification. When biological material is required to practice an invention, and if it is not so obtainable or available, the

enablement requirements of 35 USC §112, first paragraph, may be satisfied by a deposit of the material. See 37 CFR 1.802.

The specification does not provide a repeatable method for obtaining ATCC Deposit No. PTA-497 and it does not appear to be a readily available material. The ATCC® PTA-497 deposit in full compliance with 37 CFR §§ 1.803-1.809 would satisfy the requirements of 35 USC §112, first paragraph.

If a deposit is made under the terms of the Budapest Treaty, then an affidavit or declaration by Applicants or someone associated with the patent owner who is in a position to make such assurances, or a statement by an attorney of record over his or her signature, stating that the deposit has been made under the terms of the Budapest Treaty and that all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of a patent, would satisfy the deposit requirements. See 37 CFR 1.808.

If a deposit is not made under the terms of the Budapest Treaty, then an affidavit or Declaration by Applicants or someone associated with the patent owner who is in a position to make such assurances, or a statement by an attorney of record over his or her signature, stating that the deposit has been made at an acceptable depository and that the following criteria have been met:

(a) during the pendency of the application, access to the deposit will be afforded to one determined by the Commissioner to be entitled thereto;

(b) all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of a patent;

(c) the deposit will be maintained for a term of at least thirty (30) years and at least five (5) years after the most recent request for the furnishing of a sample of the deposited material;

(d) a viability statement in accordance with the provisions of 37 CFR 1.807; and

(e) the deposit will be replaced should it become necessary due to inviability, contamination or loss of capability to function in the manner described in the specification.

In addition the identifying information set forth in 37 CFR 1.809(d) should be added to the specification. See 37 CFR 1.803-1.809 for additional explanation of these requirements.

Claim rejections-35 USC § 112, second paragraph

7. Claims 25-36 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25, line 9, recites "excepting the N-terminal methionine..", which is incorrect. It is suggested that the claim be amended to recite "except the N-terminal methionine...".

Claims 26-35 are rejected as vague and indefinite insofar as they depend on the above rejected claim for their limitations.

Conclusion

No claim is allowed.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prema Mertz whose telephone number is (571) 272-0876. The examiner can normally be reached on Monday-Friday from 7:00AM to 3:30PM (Eastern time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Kunz, can be reached on (571) 272-0887.

Official papers filed by fax should be directed to (703) 872-9306. Faxed draft or informal communications with the examiner should be directed to (571) 273-0876.

Information regarding the status of an application may be obtained from the Patent application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Prema Mertz

Prema Mertz Ph.D.
Primary Examiner
Art Unit 1646
May 24, 2004